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The Negative Health Effects of External Whistleblowing: A study of some key factors

Abstract

Blowing the whistle is a pro-social behaviour which can be highly effective in the sense that wrongdoing is corrected without any adverse consequences for the person alleging or reporting it. It is also risky and can cost whistleblowers their jobs and economic security as well as physical health and mental well-being. The purpose of this study was to identify the negative health effects—physical, behavioral, emotional, and mental—of whistleblowing and to examine the impact on these effects of dismissal, number of employees who blew the whistle in a group, income, and the passage of time. We statistically analysed survey data from external whistleblowers who had been identified by the news media in South Korea. This research differs from previous studies that explored the negative health effects of whistleblowing but did not distinguish between internal and external reporting. Our study contributes to the literature on the negative health effects experienced by whistleblowers and has implications for how to better protect them.

1. Introduction

Blowing the whistle is a pro-social behaviour which can be highly effective in the sense that wrongdoing is corrected. It is also risky and can cost whistleblowers their jobs and economic security as well as physical health and mental well-being (Dozier & Miceli, 1985; Uys & Smit, 2016; Greaves & McGlone, 2012; McDonald & Ahern, 2002; Lennane, 1993).

Researchers have recorded that external whistleblowers who report fraud or unlawful conduct in the workplace to a third party outside of the organization experience more extensive or

extreme retaliation from their organizations and peers as well as their industries than internal whistleblowers (Dworkin & Baucus, 1998; Richardson & McGlynn, 2011), including assaults on their dignity (Rothschild, 2008) and the destruction of their identities (Gravley, Richardson, & Allison, 2015). The harm whistleblowers experience can continue even after they leave their organizations (Amoozegar, Wright, Greene, Titus, Bonito, & Eicheldinger, 2012; Rehg, Miceli, Near, & Van Scotter, 2008; Rothschild & Miethe, 1999). As a result, external whistleblowers are in danger of experiencing an attack on their physical health and psychological well-being (Delk, 2013). According to Greaves & McGlone (2012: 262), whistleblower protection laws have not been working effectively to help protect whistleblowers from those negative health effects.

The purpose of this study was to identify the negative health effects—physical, behavioral, emotional, and mental—of whistleblowing and to examine the impact on these effects of dismissal, number of employees who blew the whistle in a group, income, and the passage of time. The key questions addressed in this study were: (1) to what degree do external whistleblowers experience negative health effects and what types are experienced most? (2) How do the negative effects differ between whistleblowers who were dismissed and those who were not? (3) How significantly do possible key factors (dismissal, whether whistleblowing was done collectively or individually, income, and the passage of time) contribute to the negative effects? The authors believe that the answers to these questions are essential to developing the knowledge to protect whistleblowers from the negative health and psychological well-being effects of reporting wrongdoing.

In this study, we statistically analysed survey data from external whistleblowers who had been identified by the news media. This research differs from previous studies that explored the negative health effects of whistleblowing but did not distinguish between internal and external reporting (e.g., Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011;

McDonald & Ahern, 2002; Lennane, 1993). Although external whistleblowers experience more health risks than internal whistleblowers and the provisions of whistleblower legislation have also been mainly applied in the protection of external whistleblowers, not much research has been done about the negative health effects of external whistleblowing. Our study contributes to the literature on the negative health effects experienced by whistleblowers and has implications for how to better protect them.

2. Literature Review

Negative Health Effects as a Result of Blowing the Whistle

After alleging or disclosing impropriety, some whistleblowers experience retaliation by their organizations (Jos, Tompkins, & Hays, 1989), which negatively effects their health and psychological well-being. The forms of reprisal include dismissal, discrimination, harassment and isolation in the workplace.(Bjorkelo, 2013; Greaves & McGlone, 2012; Wilkes, Peters, Weaver, & Jackson, 2011; Rothschild & Miethe, 1999). Even after leaving their organization, whistleblowers may be affected by prolonged unemployment, endless lawsuits, bankruptcy, divorce, public embarrassments and social prejudice. For these reasons, many external whistleblowers experience some of the features of post-traumatic stress disorder. Earlier studies (e.g., Bjorkelo, 2013; Greaves & McGlone, 2012; Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011; McDonald & Ahern, 2002; Lennane, 1993) have explained how organizational retaliation destroys the stability in whistleblowers' workplaces and their lives, leading to devastating consequences for their health and quality of life. Jos, Tompkins & Hays (1989: 554) found in their survey of 161 whistleblowers that 31% had received psychological counselling and 26% had medical consultations, and Greaves & McGlone (2012) maintained that social isolation may also have detrimental effects on health. Based on

a result of intensive interviews with 42 external whistleblowers, the Horuragi Foundation (2013), a civic group dedicated to protecting whistleblowers, found that some of their clients experienced desperate financial straits, divorces and suicidal feelings while they were ostracized or harassed by their colleagues and lawsuits brought by their employers. The Foundation reported that six interviewees had received some form of psychiatric help for severe depression and suicidal thoughts; and 65–85% had experienced frequent fatigue, chest congestion, indigestion, sleep difficulties, social phobias, and nervous and violent behavior. Previous studies (Greaves & McGlone, 2012; Lennane, 1993) stressed that laws do little or nothing to protect them against negative health problems. Indeed, it is a feature of most legislation that it does not prevent the victimization of whistleblowers but merely compensates those who experience it (Lewis, 2017).

Four Types of Negative Health Effects

Many researchers (e.g., Greaves & McGlone, 2012; Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011; Rothschild & Miethe, 1999; Jos, Tompkins, & Hays, 1989) have suggested that disclosing wrongdoing in the workplace may trigger detrimental health effects on whistleblowers in terms of physical, behavioral and psychological aspects. Soeken & Soeken (1987) in their study of whistleblowers' stressors and coping strategies, used four categories of negative health effects: physical, emotional, social, and spiritual. In developing a healthy adults' stress response inventory, Koh, Park, Kim, & Cho, (2001) also divided the effects of stress into four types (emotional, somatic, cognitive, and behavioural).

Physical Effects. Negative physical effects are the body's reactions to excessive demands or pressure. Researchers record that, among whistleblowers, the most commonly experienced effects include insomnia, nightmares, headaches, restless sleep, persistent fatigue, nervous

diarrhea, heart palpitations, chest pain, stomach upset, loss of appetite and weight, elevated blood pressure, hair loss, and tremor (Greaves & McGlone, 2012; Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011; McDonald & Ahern, 2002; Lennane, 1993). In a survey of 70 nurses who identified themselves as whistleblowers, McDonald & Ahern (2002) reported that 70% had suffered stress-induced physical problems after exposing wrongdoing.

Behavioural Effects. Behavioral problems associated with blowing the whistle include excessive smoking, unhealthy alcohol consumption, avoiding social occasions, overeating, drug abuse, aggressive or panic outbursts, high-risk or self-injurious behaviors, and nail biting (Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011; McDonald & Ahern, 2002). When whistleblowers are exposed to extensive reprisals or are distressed by them for long periods, these behavioral effects may develop into physical diseases (Greaves & McGlone, 2012).

Emotional Effects. Previous studies (e.g., Bjorkelo, 2013; Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, 2011; Miethe, 1999; Lennane, 1993) reported that whistleblowers most commonly suffered emotional problems such as anger, acute anxiety, depression, suicidal thoughts, sadness, fear, frustration, grief/bereavement, restlessness, irritability, shame, and feelings of guilt, self-loathing, loneliness, isolation, and worthlessness. Peters, Luck, Hutchinson, Wilkes, Andrew & Jackson, (2011) found that most whistleblowers experienced tremendous “overwhelming and persistent” emotional distress (p. 2909). These emotional symptoms can easily cause subsequent health problems, eliciting extreme anxiety that they will never regain their previous lives.

Mental Effects. The effects of exposing corporate impropriety on mental health are generated when whistleblowers face disappointing results that conflict with their beliefs. Negative symptoms include memory problems, lack of concentration, sense of emptiness, and poor judgment. According to the Horuragi Foundation (2013), most external whistleblowers

could not accept that they were experiencing severe repercussions because they had believed they were doing the right thing without expecting any benefit. They were daunted by the criticism, sarcasm, and stares of the people around them, and they felt alone, misunderstood and unappreciated instead of receiving social recognition. These experiences disrupt rational and logical thinking and full concentration on work among whistleblowers.

Some whistleblowers suffer severe depression, post-traumatic stress disorder and suicidal thoughts (Bjørkelo, 2013). Soeken & Soeken (1987) observed that whistleblowers suffered more negative effects on their emotional state than on their social activities and physical health as a result of disclosure. In their study, spiritual well-being was the least affected. Similarly, Hollings (2013) and Jos, Tompkins, & Hays (1989) have explained that whistleblowing is an outburst of repressed anger. The most intensive reactions to organizational retaliation as a result of exposing wrongdoing were feelings such as disbelief, anger, depression, and anxiety (Uys & Smit, 2016) because whistleblowers think they are being retaliated against for doing what they thought they should do. These findings suggest that negative emotions will be greater than the other types of effects experienced by whistleblowers.

H1: External whistleblowers will experience greater negative emotional effects than other types of effects.

The negative health effects of exposing wrongdoing might be influenced by any number of things. In this study we considered four key factors: whether the whistleblower was dismissed or not, whether he or she disclosed wrongdoing as a group, income, and time elapsed since the whistleblowing.

Dismissal

Forcible termination of employment can cause whistleblowers lasting and substantial economic distress, which is one of the reasons why laws specifically outlaw the dismissal of workers who disclose wrongdoing. Dismissal can be a key factor in the negative health consequences of whistleblowing, and when whistleblowers are dismissed, any negative health effects are most likely compounded by loss of income and entanglement in lawsuits, perhaps subsequently resulting in marital and family problems (Uys & Smit, 2016). The Horuragi Foundation (2013) reported that 25 (59.5%) out of 42 external whistleblowers were dismissed after exposing corruption in their organizations, and eleven of them were part of ongoing litigation or petitions against their organizations to be reinstated. These findings suggest that whistleblowers who were dismissed may experience more severe conditions leading to negative health effects than those who were not, although those who remain in the organization can also suffer discrimination and abuse in the workplace.

H2: Dismissal will significantly increase the negative health effects of blowing the whistle.

Disclosure as an Individual or Group

Whistleblowing as a group may have advantages over doing so alone - as a group, members may feel psychological safety, an increased sense of the legitimacy of their actions, influence on the organization, and the likelihood of success. Group reporting of wrongdoing may reduce the likelihood of organizational retaliation, and larger group size might increase these effects. Thus, we hypothesized:

H3: Members of larger whistleblower groups will experience less-negative health effects.

Income and the passage of time

Income may have profound effects on whistleblowers' physical and mental health. Earlier studies (e.g., Lim, Kimm, & Song, 2015; Stronks, van de Mheen, van den Bos, & Mackenbach, 1997; Ettner, 1996) have confirmed that there is a negative relationship between income and personal health problems, although the relationship is not always linear. The passage of time elapsed has also been mentioned as alleviating the negative physical and psychological symptoms of extreme events. Longitudinal studies of post-traumatic stress symptoms (Giacco, Matanov, & Priebe, 2013; Marshall, Miles, & Stewart, 2010; Johansen, Wahl, Eilertsen, & Weisaeth, 2007) showed that time has one of the most favorable impacts on negative health effects. After a person exposes wrongdoing, the intensity of the stress from doing so will decrease over time even if symptoms are ongoing.

H4: *Income will reduce the negative health effects of blowing the whistle.*

H5: *More time elapsed after disclosing wrongdoing will reduce the negative health effects of doing so.*

3. Methods

Subjects and Data Collection

A survey method was employed to collect data from South Korean external whistleblowers whose identities were revealed by the news media after exposing wrongdoing. A multi-track approach was used to survey as many whistleblowers as possible. First, we compiled all cases of external whistleblowing since 1990 from the Korean Integrated News Database System, a newspaper article retrieval system. Using whistleblower, whistleblowing, and public interest discloser or informant as key words, we identified 157 whistleblowers. We obtained contact

information for 143 of them with the help of civic groups that had provided support, whistleblowers and their social networks. We also offered a payment equivalent to about 150 US dollars for their participation in our three different surveys and in-depth interviews. While it is possible that this impacted on the sample that emerged, the authors feel confident that this sum would not have affected the content of the responses received. The survey was conducted between December 2013 and January 2017 and achieved 127 completed returns.

Measures

Negative Health Effects of Blowing the Whistle

External whistleblowing often has the prominent features of a traumatic stressor that leads to actual or threatened health problems. Our pool of 87 possible health problems whistleblowers could experience after their identities were revealed to the public was based on four different resources that are widely cited to explain health problems: the General Health Questionnaire (Layton & Rust, 1986), the Korean version of the Stress Response Inventory (Koh, Park, Kim, & Cho, 2001), the literature on whistleblowers' health problems (e.g., Greaves & McGlone, 2012; Peters, Luck, Hutchinson, Wilkes, Andrew, & Jackson, 2011; McDonald & Ahern, 2002; Soeken & Soeken, 1987), and the in-depth interview report on 42 Korean external whistleblowers' human rights violations (the Horuragi Foundation, 2013). From this pool we selected 36 negative health effects with the help of three whistleblowers and two staff members from whistleblower protection groups that had worked to support whistleblowers for more than 10 years. The negative health effect measurement instrument we used had four categories with different numbers of items: there were eight items for physical effects (insomnia, headache, chest pain, lack of appetite, indigestion, pent-up pressure in the chest, neurogenic stomach trouble, and frequent fatigue), seven for behavioral effects (violent behavior, avoidance of human relations, swearing, nervous

behavior, increased smoking/drinking, fidgeting, overeating), 14 for emotional effects (victim mentality, anger, frustration, depression, suicidal feelings, prolonged anxiety, decreased self-respect, nervousness, helplessness, dissatisfaction, fear, restlessness, irritation, impatience), and seven for mental effects (hypomnesia, desperation, difficulty concentrating, loss of a sense of humour, irresolution, sense of emptiness, forgetfulness). We asked a question, “[About the things that have happened since you exposed wrongdoing in the organization] How much did you experience the following over the last six months?” We then gave the respondents the 36-item survey, on which each item was rated with a five-point Likert-type scale (1 = do not agree at all, to 5 = completely agree). We examined how well each item fit its category using exploratory factor analysis. Kaiser-Meyer-Olkin (KMO) and Bartlett’s tests were first run because the sample of 127 cases might have been insufficient for the analysis. The KMO result, which measures sampling adequacy, was .918 ($p < .000$), showing that our data were well suited for a factor analysis. Next, we conducted a factor analysis of all items by each type of negative health effects. Although Kaiser’s rule of eigenvalue > 1 has been widely used to determine the number of significant factors to retain in an analysis, many researchers (e.g., Courtney, 2013; Patil, Singh, Mishra, & Donovan, 2008; Franklin, Gibson, Robertson, Pohlmann, & Fralish, 1995) emphasized the need to use more than one rule to prevent extracting more factors than necessary. In this study, we used Kaiser’s rule and another rule of parallel analysis that eigenvalues should be greater than those computed from the corresponding random data to find the right number of factors, and a single factor was extracted for all of the negative effect type. The Cronbach’s α values for physical, behavioral, emotional, and mental effects were .70, .90, .96 and .91, respectively.

Dismissal

In relation to dismissal we asked the question, “Were you fired after you disclosed

wrongdoing within your organization?” It was a yes-or-no question, and we assigned 1 for yes and 0 for no. Eighty-one participants (63.8%) had been dismissed and 46 (36.2%) had not. Those who had not been dismissed included two university and high school students and nine enlisted soldiers whose services were mandatory.

Disclosure as an Individual or Group

This was measured by asking the respondents how many other colleagues in their organization they had disclosed wrongdoing with. The vast majority of respondents, 105 (82.7%), had disclosed on their own, and 22 (17.3%) had done so as part of groups of two to eight.

Income

We assessed household income by asking, “What is your entire average monthly household income (all family members)?” The categories, in millions of Korean won (cf. the won-dollar exchange rate is 1 to 1,150) were: 1 = less than 1; 2 = 1-1.9; 3 = 2 – 2.9; 4 = 3 – 3.9; 5 = 4 – 4.9; 6 = more than 4.9. Eighty-five (66.9%) earned under 3.9 million won monthly, and 42 (33.1%) earned 3.9 million won or more, compared with 60 (47.2%) and 67 (52.8%), respectively, who had earned those amounts before they had disclosed.

Time Elapsed

To measure the time elapsed since respondents had disclosed the wrongdoing, we asked: “How many years have passed since your whistleblowing?” The mean length of time was 6.17 years.

Demographics of the Sample

The sample consisted of 109 (85.8%) males and 18 (14.2%) females; approximately 10% were aged 40 or younger. By education level, the majority (94.5%) of respondents had higher than junior college or four-year university degrees. The fact that the respondents were overwhelmingly male and highly educated is consistent with earlier studies (e.g., Jos, Tompkins, & Hays, 1989; Soeken & Soeken, 1987). By institution type, 12 (9.4%) survey respondents had worked for government agencies, 32 (25.2%) for state-owned or -affiliated organizations, 27 (21.3%) for education institutions, 41 (32.3%) for private companies, and 15 (11.8%) for the military or the police.

4. Data Analysis

Descriptive Statistics and Correlations

We ran descriptive and correlation analyses to answer our research questions, and Table 1 reports means, standard deviations, and correlations.

Table 1
Descriptive Statistics and Pearson Correlations between Important Variables (*N* = 127)

		ME AN	SD	Type of Negative Health Effects				Dismissal	Disclosure in a Group	Income	Time Elapsed	GN	AG	ED
				Physical	Behavioral	Emotional	Mental							
Type of Negative Health Effects	Physical	2.83	1.20	1.00										
	Behavioral	2.61	1.02	.642***	1.00									
	Emotional	3.09	1.05	.667***	.758***	1.00								
	Mental	2.72	1.01	.661***	.693***	.793***	1.00							
Dismissal		.64	.48	.175*	.130	.207**	.151	1.00						
Disclosure in a Group		1.49	1.27	.177*	-.108	-.012	.014	-.052	1.00					
Income		3.58	1.65	-.293***	-.280***	-.366***	-.337***	-.268**	.068	1.00				
Time Elapsed		6.17	6.57	-.253**	-.195*	-.280***	-.130	.001	.001	.133	1.00			
GN		.86	.35	-.174*	.043	-.140	-.098	-.165	-.079	.075	.205*	1.00		
AG		3.35	.91	-.025	.078	-.056	.021	-.067	.124	.120	.306***	.350***	1.00	
ED		2.35	.58	.021	-.017	.009	.028	.057	.081	.151	.030	.087	.170	1.00

Note. Correlations with GN and dismissal are Spearman's rho. GN = gender; AG=age; and ED=education level. Dismissal was coded as 1 = dismissed, 0 = not. Disclosure in a group was number of whistleblowers who disclosed wrongdoing in a group. Income (monthly household): 1 = less than 1 million Korean won; 2 = 1-1.9; 3 = 2-2.9; 4 = 3-3.9; 5 = 4-4.9; 6 = more than 4.9. Time elapsed was number of years since the disclosure. Gender was 1 = male, 0 = female. Age was 1 = less than 30, 2= 30-39, 3= 40-49, 4= 50-59, 5 =more than 59. Education level was 1 = less than a high school degree or equivalent, 2 = junior college degree or 4-year university degree, and 3= postgraduate degree.

p* < .05, *p* < .01, ****p* < .001; two-tailed tests.

The four types of negative health effects of whistleblowing were significantly correlated with each other (ranging from $r = .642$ to $r = .793$, $p < .001$). Dismissal had positive relationships with negative physical and emotional effects ($r = .175$, $p < .05$; $r = .207$, $p < .01$, respectively); dismissed whistleblowers perceived more-negative physical and emotional effects than did those who had not been fired. Disclosure in an individual or group only had a significantly positive association with the physical type of negative health effects ($r = .177$, $p < .05$). Income had the greatest correlations with all four negative health effect types but the correlations were negative ($r = -.293$; $r = -.280$; $r = -.366$; $r = -.337$); that is, the lower the respondents' monthly household income, the more negative health effects they experienced. Time elapsed also had significantly negative associations but only with three types of negative health effects (physical, behavioral, and emotional) at different levels of significance ($r = -.253$; $r = -.195$; $r = -.280$, respectively). Gender was negatively related with only negative physical health effects ($r = -.174$, $p < .05$).

Individual Negative Health Effect Items

One of the research questions aimed to identify the level of each negative health effect experienced by the respondents and examine the differences between the whistleblowers who had been dismissed from their organizations and those who had not. Descriptive analysis and an independent-samples t-test were conducted. Table 2 shows the results.

Table 2
Level of Negative Health Effects by Four Types ($N = 127$)

Types	Negative Health Effects	Mean(s.d.)		Mean differences	t value
		Dismissed ($n=81$)	Not ($n=46$)		
Physical ($n=8$)	1 Insomnia	3.22(1.24)	2.89(1.34)	.331	1.408
	2 Headache	2.78(1.21)	2.48(1.17)	.300	1.354
	3 Chest pain	2.33(1.12)	2.00(1.01)	.333	1.718
	4 Lack of appetite	2.65(1.23)	2.43(1.15)	.220	.992

	5	Indigestion	2.69(1.26)	2.39(1.06)	.300	1.361
	6	Pent-up pressure in the chest	3.21 (1.14)	2.76(1.14)	.449	2.138*
	7	Neurogenic stomach trouble	2.72(1.31)	2.30(1.01)	.412	1.982*
	8	Frequent fatigue	3.46 (1.13)	3.04 (1.35)	.413	1.845
Behavioral (n=7)	9	Violent behavior	2.40(1.17)	2.30(1.21)	.091	.415
	10	Avoidance of human relations	3.20 (1.35)	2.87(1.39)	.328	1.304
	11	Swearing	2.35(1.20)	2.28(1.19)	.063	.287
	12	Nervous behavior	3.01 (1.23)	2.72(1.28)	.295	1.281
	13	Increased smoking/ drinking	2.93(1.48)	2.41(1.38)	.513	1.924
	14	Fidgeting	2.77(1.30)	2.52(1.35)	.244	1.004
	15	Overeating	2.30(1.19)	1.98(1.16)	.318	1.461
Emotional (n=14)	16	Victim mentality	3.68 (1.08)	3.24 (1.35)	.440	1.889
	17	Anger	3.64 (1.17)	3.43 (1.34)	.207	.910
	18	Frustration	3.38 (1.20)	3.07 (1.36)	.317	1.367
	19	Depression	3.05 (1.26)	2.59(1.34)	.462	1.937
	20	Suicidal feelings	2.43(1.37)	1.93(1.14)	.497	2.191*
	21	Prolonged anxiety	3.42 (1.25)	3.22 (1.41)	.202	.835
	22	Decreased self-respect	3.15 (1.30)	2.50(1.31)	.648	2.698**
	23	Nervousness	3.42 (1.16)	2.93(1.36)	.485	2.128*
	24	helplessness	3.32 (1.22)	2.70(1.38)	.625	2.642**
	25	Dissatisfaction	3.54 (1.15)	3.22 (1.40)	.326	1.417
	26	Fear	2.75(1.20)	2.54(1.31)	.210	.915
	27	Restlessness	3.10 (1.22)	2.83(1.32)	.273	1.174
	28	Irritation	3.36 (1.15)	2.91(1.35)	.445	1.964
	29	Impatience	2.99(1.23)	2.57(1.24)	.422	1.854
Mental (n=7)	30	Hypomnesia	2.77(1.34)	2.54(1.33)	.222	.902
	31	Desperation	2.52(1.20)	2.20(1.13)	.323	1.493
	32	Difficulty concentrating	2.84(1.28)	2.22(1.09)	.622	2.772**
	33	Loss of a sense of humor	2.93(1.25)	2.48(1.28)	.448	1.922
	34	Irresolution	2.60(1.24)	2.24(1.18)	.366	1.626
	35	Sense of emptiness	3.48 (1.18)	3.13 (1.34)	.351	1.529
	36	Forgetfulness	2.75(1.28)	2.67(1.28)	.079	.335

Note. Unequal variances were assumed for items 3 and 7 as a result of Levene's test. The means for negative health effects > 3.0 are in boldface.

*p<.05; **p<.01; ***p<.001; 2-tailed tests.

The means of the four types of negative health effects (emotional, behavioral, somatic, and mental) were 3.09, 2.61, 2.83, and 2.72, respectively. In the t-test of the mean differences, we found that the mean value of emotional effects was the largest, and it was significantly different from that of somatic effects, which was the second largest (mean differences=.254; $t=3.079$; $\text{sig}=.003$). Among the four types of negative health effects, negative emotional

effects also had the most means above 3.0, showing that external whistleblowers experience the more negative emotional health problems than other types. Thus, Hypothesis 1 (*External whistleblowers will experience greater negative emotional effects than other types of effects*) was accepted. This finding is consistent with those of McDonald & Ahern (2002: 14). Although these researchers analyzed data from nurse whistleblowers and did not distinguish between external and internal whistleblowing, they found that 94% of whistleblowers suffered stress-related emotional problems and that 70% had physical and behavioural problems. Rothschild & Miethe (1999) reported that 84% of whistleblowers had suffered depression or anxiety and 69% had experienced declining physical or behavioral health. Dismissed whistleblowers mostly reported higher levels of all the negative health effects but the differences between the two groups were significant for only seven items (physical: pent-up pressure in the chest and neurogenic stomach trouble; emotional: suicidal feelings, decreased self-respect, nervousness, and helplessness; and mental: difficulty concentrating).

Impact of Key Factors on the Four Types of Negative Health Effects

We ran a regression analysis to examine the impacts of the key factors on the four types of negative health effects of exposing wrongdoing, controlling for demographics because we found significant associations in the correlation analyses between gender and negative physical health effects and gender and age and time elapsed. Table 3 shows the results.

Table 3

Impact of Key Factors on the Four Types of Negative Health Effects ($N = 127$)

Predictors	Dependent Variable: Four Types of Negative Health Effects of Blowing the Whistle			
	Physical	Behavioral	Emotional	Mental
Constant	3.014***	2.658***	3.633***	2.932***
Dismissal	.271 (.109)	.128 (.060)	.159 (.073)	.140 (.067)
Disclosure in a Group	.182* (.192)	-.089 (-.111)	.003 (.004)	.020 (.025)
Income	-.187** (-.257)	-.156** (-.252)	-.207*** (-.327)	-.197*** (-.324)
Time Elapsed	-.041* (-.223)	-.034* (-.221)	-.039** (-.244)	-.016 (-.105)
GN	-.415 (-.121)	.135 (.046)	-.356 (-.119)	-.302 (-.105)
AGE	.136 (.103)	.193 (.173)	.119 (.104)	.141 (.128)
ED	.084 (.041)	.003 (.002)	.100 (.056)	.109 (.063)
Adjusted R ²	.155	.099	.168	.099
F value	4.291	2.973	4.640	2.978
Sig.	.001	.007	.000	.006

Note. The figures in parentheses are standardized regression coefficients. Dismissal was coded as 1 = dismissed, 0 = not. Disclosure in a group = number of whistleblowers who disclosed wrongdoing in a group. Income (monthly household) was rated as 1 = less than 1 Korean won; 2 = 1-1.9; 3 = 2-2.9; 4 = 3-3.9; 5 = 4-4.9; 6 = more than 4.9 million won. Time elapsed = number of years since the disclosure. Gender was coded as 1 = male, 0 = female. Age was 1 = under 30, 2 = 30–39, 3 = 40–49, 4 = 50–59, 5 = over 59. Education level was 1 = less than a high school degree or equivalent, 2 = junior college degree or 4-year university degree, and 3 = postgraduate degree.

* $p < .05$; ** $p < .01$; *** $p < .001$.

All of the types of negative health effects were significantly explained by key factors (adjusted $R^2 = .155, .099, .168, .099$). Dismissal was an insignificant predictor for all of the negative health effect types. Although dismissal had significant positive associations with negative physical and emotional health effects of disclosing wrongdoing in the correlation analyses, the effects were no longer significant when we controlled for income in the regression analysis. Based on this finding, Hypothesis 2 (*Dismissal will significantly increase the negative health effects of blowing the whistle*) was rejected. This result shows that whether whistleblowers were dismissed from their jobs or not was not significant in the degree of negative health effects but income was. Disclosure as part of a group was significantly and positively associated with only negative physical health effects ($b = .182, p$

< .05). That is, disclosing wrongdoing as part of a group increased rather than decreased the level of negative physical health effects. Thus Hypothesis 3 (*Members of larger whistleblower groups will experience less-negative health effects*) was rejected. This unexpected result could be because exposing wrongdoing as part of a group might be a laborious process that involves possible conflicts of interest and even betrayal among whistleblowers in extreme cases. Income was negatively associated with all of the negative health effect types, and time elapsed also had negative impacts on physical, behavioral, and emotional health problems, but not mental health ($b = -.016, p > .05$). The impact of income was greater than that of time elapsed. Hypothesis 4 (*Income will reduce the negative health effects of blowing the whistle*) was fully accepted, but Hypothesis 5 (*More time elapsed after disclosing wrongdoing will reduce the negative health effects of doing so*) was only partly accepted.

5. Findings and Discussion

The results of our analyses offer valuable information about the negative health effects of blowing the whistle and the factors that affect these negative effects. First, the respondents perceived more negative emotional health effects of disclosing wrongdoing than other types of effects. This result shows that whistleblowers are emotionally sensitive to both their organization's and colleagues' responses after they have disclosed wrongdoing. This is probably because their behaviors are often heavily criticized by colleagues who feel betrayed and further because they believe that they did not receive the recognition they deserve despite doing the morally right thing and promoting "the requirements and interests of the organization" (Greaves & McGlone, 2012: 261). Hollings (2013: 511) identified the role of

emotion in the decision to blow the whistle as significant, particularly anger as “a prerequisite to motivate whistleblowers to reach a final decision.” Workers may not disclose until they experience “an intense emotional episode in which anxiety, fear or indecision [is] transformed into anger,” even when they believed they had positive arguments for speaking out (p. 504). According to the Horuragi Foundation report (2013), whistleblowers most commonly experienced extremely negative feelings such as anger, fear, and feeling of loneliness when they were retaliated against and viewed as disloyal despite the fact that they had done the right thing. While legislation and trade unions may be of assistance in the process of reporting concerns (Lewis & Vandekerckhove, 2016) they offer little help in protecting whistleblowers from health issues (Greaves & McGlone, 2012). However, psychosocial interventions are effective in relieving emotional stress (Schneiderman, Ironson, & Siegel, 2005) because the majority of whistleblowers need people they can talk to for help. Government financial support for self-help networks to protect whistleblowers can be a practical alternative to help them receive support and encouragement from other whistleblowers who were retaliated against after exposing wrongdoing and be informed about how to cope with negative effects.

Second, dismissed whistleblowers experienced higher levels of all the negative health effects than whistleblowers who stayed with the organization after blowing the whistle, although the differences between the two groups were significant for only part of the negative health effect items. Further, dismissal didn’t have a significant impact on those effects of disclosing wrongdoing when we considered income in the regression analysis. This result is subject to two different interpretations: one could be that whistleblowers who remain in their organizations experience as serious negative health consequences as those who leave them. Peters, Luck, L, Hutchinson, Wilkes, Andrew, & Jackson, (2011) stated that whistleblowers who had remained in the workforce after disclosing wrongdoing also experienced constant

distress, leading to acute anxiety and depression. The other interpretation might be that, although dismissed whistleblowers experienced more negative health effects than those who were not fired, this impact derived largely from their low incomes rather than the dismissal itself.

Third, the number of whistleblowers who exposed wrongdoing as part of a group did not significantly affect most of the negative health effect types. It might be thought that reporting wrongdoing along with co-workers would be less stressful but our results showed that exposing wrongdoing as part of a group increased negative physical effects. The increase in physical problems might be related to the difficulties of co-ordinating conflicting opinions and activities among whistleblowers. Indeed, an individual whistleblower could face the prisoners' dilemma whereby, after the wrongdoing is disclosed, the organization attempts to defeat the group one by one, threatening to punish them or offering to reward them. The individual might be tempted to act in his or her own best interest against the common purpose of the group, causing the negative physical effects such as insomnia, headaches, and pent-up pressure in the chest.

Fourth, income was prominent as a factor in all of the negative health effect types. This result is consistent with those of many earlier studies (Lim, Kimm, & Song, 2015; Benzeval, Judge, & Shouls, 2001; Ettner, 1996) which demonstrate that income has a major impact on relieving health problems. The Horuragi Foundation (2013) reported that for more than half of its survey respondents, incomes had decreased by half after they blew the whistle. Lennane (1993: 668) found in the survey study of 35 whistleblowers that income had dropped by three-quarters or more for 14 participants. Lost income can easily undermine whistleblowers' living conditions, resulting in harmful effects on their health. The Horuragi Foundation (2013) also found that many dismissed whistleblowers could not accept the reality of their circumstances. Despite helping the government and contributing to protecting the public

interest and safety, many whistleblowers could barely afford their living expenses, their children's education, the costs of lawsuits, and medical fees. This suggests that protecting whistleblowers against rapid loss of income could be more important than providing a right to claim unfair dismissal. Clearly, making unlimited compensation easier to achieve or establishing a government fund to assist whistleblowers in extreme economic hardship, even if they cannot meet their previous income levels, could help them overcome the negative health effects (Lewis, 2017). This could be justified on the basis that the reporting of unlawful acts, in particular corruption and threats to safety, substantially helps both the public and private sectors to provide services of higher quality. Indeed, some government agencies have already offered monetary rewards to get immediate information on violations of law (e.g., Hurwitz & Kovacs, 2016; McCabe & Glass, 2014; Hu, 2014; Brown, Lewis, Moberly & Vandekerckhove, 2014).

Lastly, length of time elapsed significantly lowered all of the negative health effects types except for mental health. This result shows that whistleblowers suffer mental issues such as sense of emptiness and loss of a sense of humour that can last for years.

6. Limitations

The main limitation of this study is that the findings are based solely on data collected from Korean external whistleblowers. This limits the generalization of the results because the negative health effects of exposing wrongdoing could differ depending on a wide variety of cultural conditions. In their study of attitudes in South Korea, Turkey, and the U.K. to the ways in which employees blow the whistle, Park, Blenkinsopp, Oktem, & Omurgonulsen, (2008) found that cultural orientations might have different effects on attitudes in different countries, showing that generalizing about the effect of culture could be difficult. Park, Rehg

& Lee (2005) reported that cultural traits, such as Confucian ethics and collectivism, also had a significant impact on the intention to blow the whistle, although their impact can vary with respect to the extent and ways in which they influence it. In the current legal context, however, the South Korean government enacted laws that protect whistleblowers from retaliation in the public sector in 2001 and in the private sector in 2011. This legislation also offers financial rewards in exchange for reporting wrongdoing, confirming that different countries adopt similar legal approaches to whistleblowing (Vaughn 2012). Additional studies would be necessary in order to examine whether our findings apply in other countries.

7. Conclusions

External whistleblowers may experience damaging health consequences after they expose wrongdoing. Our findings reveal that they suffer more emotional problems than any other types of health problems but that income could mitigate these problems. This study provides policy insights into how to better protect whistleblowers: Economic support and social recognition might be added to the passage of time in relieving the negative effects of whistleblowing. For example, whistleblowers might receive awards or commendations from their employer or the government for the service they have provided in reporting concerns about wrongdoing. While institutional efforts to prevent the negative health effects have not yet been fully developed, improving the understanding of possible harmful health consequences of blowing the whistle and helping keeping potential whistleblowers well informed about health problems they may face are vital. Indeed, if whistleblowing in the public interest is to be encouraged, employers need to ensure that risk assessments are conducted which focus on the dangers of retaliation being suffered and how these could be reduced. It would also be sensible for potential whistleblowers to make their own risk

assessments so that they can protect themselves and gain some control over potential negative effects.

COMPLIANCE WITH ETHICAL STANDARDS:

Conflict of Interest: Both authors declare that they have no conflict of interest.

Ethical approval: All procedures performed in studies involving human participants were in accordance with the ethical standards of the institutional and/or national research committee and with the 1964 Helsinki declaration and its later amendments or comparable ethical standards.

Informed consent: Informed consent was obtained from all individual participants included in the study.

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